

PERLACOM
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Claims:

1. Method for opening the nips (9, 10) of a calender comprising at least two elements (1, 2; 3, 4) brought to a nip contact with each other, especially for performing the nip opening at a break or damage occurring in the web (5) being calendered, in which method the tension of the web (5) being calendered is measured at multiple points over the cross-machine width of the web (5), characterized in that the calender nips (9, 10) are opened when the measured web tension at a preset number of points over the cross-machine width of the web (5) has fallen to a limit value that by a decision-making algorithm monitoring the tension profile of the web (5) is interpreted to indicate a web break situation or other damage on the web (5) requiring opening the nips (9, 10).
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2. Method according to claim 1, characterized in that
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 - a reference value is set for the tension of the web (5) measured at a point over the cross-machine width of the web,
 - said measured tension value of the web (5) is compared with said reference value, and
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 - the calender nips (9, 10) are opened when the ratio of the areas, at which the measured tension values of the web (5) fall below a
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preset reference value, as summed over the cross-machine width of the web (5), to the overall width of the web (5) exceeds a preset limit value.

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3. Method according to claim 1, characterized in that

- a preset reference value is set for the tension of the web (5) measured at a point over the cross-machine width of the web,
- a weighted average is computed from said measured tension values of the web (5) obtained from different points over the width of the web, and
- the calender nips (9, 10) are opened when said weighted average of the web tension values falls below the preset reference value.

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4. Method according to claim 3, characterized in that the width of the detected area is used as the weighing factor of said weighted average.

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5. Method according to any one of foregoing claims, characterized in that the tension of the web (5) being calendered is measured indirectly by way of measuring the pressure of an air cushion formed between the moving web (5) and a gauging bar, which is located in a close proximity to said web (5) and has an at least partially arcuate shape in

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the travel direction of said web (5), whereby the measured pressure of said air cushion is proportional to the tension of said web (5).

5 6. Method according to any one of foregoing claims, characterized in that the web (5) being calendered is severed with the help of an air-jet cutting device when a decision-making algorithm monitoring the tension profile of said web (5) interprets the detected situation to be caused by a web break or other damaged area of the web (5) that necessitates the opening of the nips (9, 10).

10 7. Assembly for opening calender nips (9, 10), particularly at the occurrence of a break or damage in a web (5) being calendered, said assembly comprising

- at least two members (1, 2; 3, 4) adapted to cooperate in a nip contact so as to pass therebetween the web (5) being calendered, and
- a gauging device (6, 7, 8) for measuring the tension of the web (5) being calendered at multiple points along the cross-machine width of the web (5),

20 characterized in that the calender nips (9, 10) are adapted openable when the web tension measured at a preset number of cross-machine points of the web (5) has fallen to a value at which a decision-making algorithm monitoring the tension profile of the web (5) interprets the detected

situation to be caused by a web break or other damaged area of the web (5) that necessitates the opening of the nips (9, 10).

5 8. Assembly according to claim 7, characterized in that said gauging device (6, 7) is located at a point preceding said calender nip (9, 10) upstream in regard to the travel direction of the web (5).

10 9. Assembly according to claim 7 or 8, characterized in that said gauging device (8) is located at a point after said calender nip (9, 10) downstream in regard to the travel direction of the web (5).

15 10. Assembly according to any one of claims 7-9, characterized in that said gauging device (6, 7, 8) is a gauging bar shaped to have an at least partially arcuate surface in the travel direction of said web (5) and has pressure sensors adapted to holes made thereon.

20 11. Assembly according to any one of foregoing claims, characterized in that one of the members (1, 2; 3, 4) forming said calender nip (9, 10) is metal-surfaced roll and the other one is soft-coated roll.

25 30 12. Assembly according to any one of foregoing claims, characterized by an air-jet cutting device adapted to perform the severing of said web

(5) being calendered at the instant the decision-making algorithm monitoring interprets the situation to be a web break or a so extensively damaged area of the web (5) that requires the opening of the nips (9, 10).

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13. Assembly according to claim 12, characterized in that said air-jet cutting device is integrated with said web tension gauging bar.

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14. Method for detecting a break or damage occurring in a web (5) being calendered, in which method the machine-direction tension of the web (5) being calendered is measured at multiple points over the cross-machine width of the web (5), characterized in that a break or damage of the web (5) is indicated when the measured web tension at a preset number of points over the cross-machine width of the web (5) has fallen to a limit value that by a decision-making algorithm monitoring the tension profile of the web (5) is interpreted to indicate a web break situation or other damage on the web (5) requiring opening the nips (9, 10).